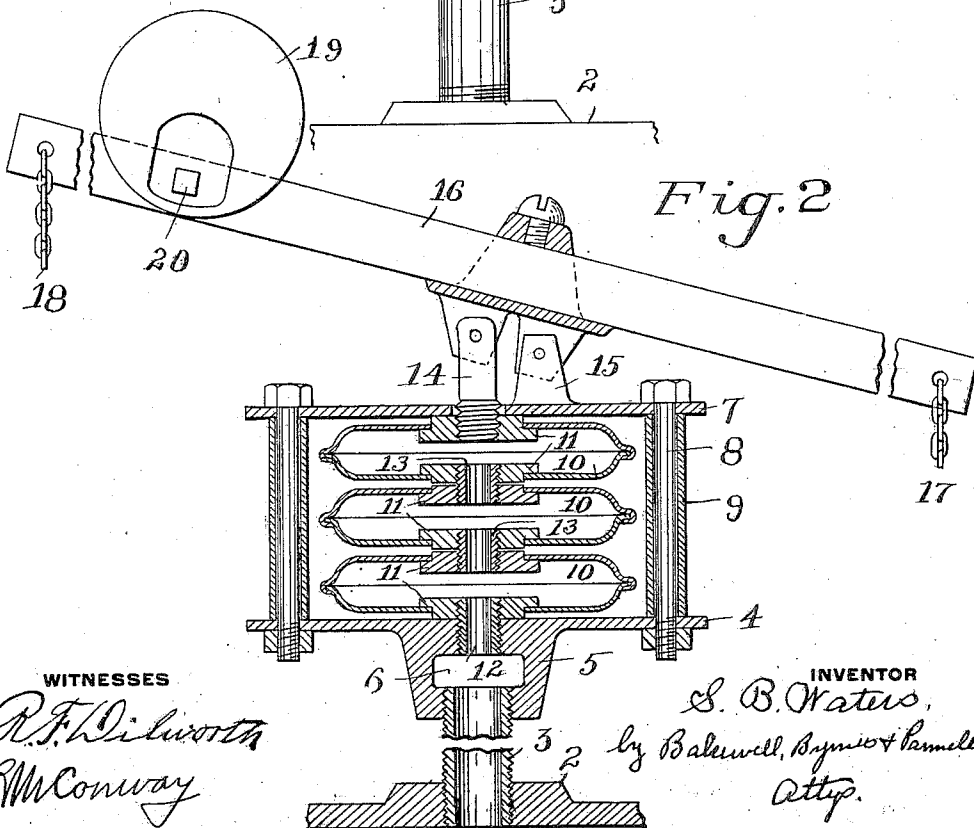
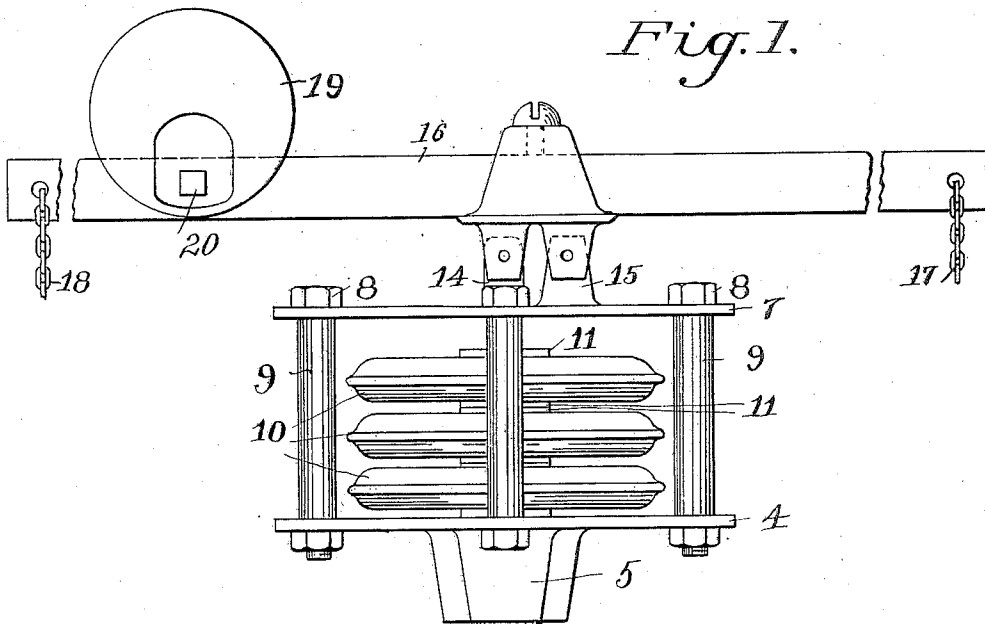


S. B. WATERS.
DAMPER AND DRAFT REGULATOR FOR FURNACES.
APPLICATION FILED AUG. 31, 1912.

1,163,385.

Patented Dec. 7, 1915.



WITNESSES
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UNITED STATES PATENT OFFICE.

SAMUEL B. WATERS, OF JOHNSTOWN, PENNSYLVANIA, ASSIGNOR TO NATIONAL RADIATOR COMPANY, OF JOHNSTOWN, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DAMPER AND DRAFT-REGULATOR FOR FURNACES.

1,163,385.

Specification of Letters Patent.

Patented Dec. 7, 1915.

Application filed August 31, 1912. Serial No. 718,112.

To all whom it may concern:

Be it known that I, SAMUEL B. WATERS, a resident of Johnstown, in the county of Cambria, State of Pennsylvania, have invented a new and useful Improvement in Dampers and Draft-Regulators for Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of one form of my improved regulator, and Fig. 2 is a longitudinal section thereof.

My invention relates to automatic damper or draft regulators for low pressure steam boilers and is designed to provide a cheap and efficient device of this character which can be readily manufactured, can readily be assembled and attached to a boiler.

The precise nature of my invention will be best understood by reference to the accompanying drawings which will now be described, it being premised, however, that various changes may be made in the details of construction and general arrangement of the parts, without departing from the spirit and scope of my invention as defined in the appended claim.

In the drawings, the numeral 2 designates the top of a boiler and 3 is a nipple connected thereto.

4 is a bottom plate of a supporting frame which is provided with a downwardly extending projection 5, having a chamber 6 which is connected to the boiler 2 by means of the nipple 3, which extends into a threaded opening through the bottom of the projection 5.

7 is the top plate for the casing or frame for the regulator which is connected to the bottom plate 4 by means of screw-bolts 8 which pass through both of the plates and through spacing sleeves 9, which are arranged to hold the plates 4 and 7 in proper position with relation to each other.

Mounted within the frame formed by the plates 4 and 7 are a plurality of collapsible shells 10 which are formed from metal, such as spring brass or any spring metal. Connected to the top and bottom of each of these shells is a flanged disk 11 which is screw threaded through its central portion.

12 is a nipple connecting the flanged disk 11 of the lower shell 10 with the plate 4

and is arranged to permit the steam to pass from the boiler 2 to the lower shell. 13—13 are similar nipples which connect the flanged disks of adjacent shells 10 with each other.

14 is a plug having a screw threaded engagement with the disk 11 connected to the top of the upper shell 10. Pivotally mounted on a lug 15 extending upwardly from the plate 7 is a lever 16, which is also pivotally connected to the upper end of the plug 14.

17 and 18 are chains connected to the ends of the lever 16, and 19 is a weight connected to the lever 16 by means of a set-screw 20 and is arranged to be moved along the lever 16 to counterbalance the door or damper connected to either of the chains 17 or 18.

If the device is to be used to operate the damper to check the draft of the furnace, the damper would be connected to either of the chains in such a manner that the damper would be closed when the shells are distended, as shown in Fig. 2, and if it is desired to operate the door for admitting air to the furnace, the door would be connected to either of the chains so that the draft door is closed when the lever 16 is in the position shown in Fig. 2.

The operation of the device is as follows: When the steam in the boiler is below the normal pressure, the parts are in the position shown in Fig. 1, and as soon as the pressure of the steam rises to the predetermined point, the pressure will distend the shells 10, as shown in Fig. 2, and through the medium of the various connections the lever 16 will be actuated and operate the draft controlling damper or door.

The advantages of my invention result from the provision of a regulating device having one or more collapsible metallic shells which are arranged to be distended by steam pressure to actuate the damper controlling mechanism and further from the provision of means for stopping the distention of such shells after they have been moved a predetermined distance.

I claim:

A damper regulator comprising a frame having a bottom plate, a steam pipe connecting said bottom plate with the boiler and forming a support therefor, there being a cavity in the bottom plate communicating with the steam pipe, a top plate con-

3 nected to the bottom plate and spaced there-
 from, a plurality of collapsible shells con-
 nected to each other and between the top
 and bottom plate, said shells communicat-
 ing with each other, a nipple connecting the
 lower shell with the bottom plate and com-
 municating with the cavity therein, a dam-
 per lever pivotally connected to the top
 plate, and an actuating connection between

the top shell and the damper regulating 10
 lever; substantially as described.

In testimony whereof, I have hereunto
 set my hand.

SAMUEL B. WATERS.

Witnesses:

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 H. A. HERSHEY.